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Helping Canada Meet Its Climate Change Objectives

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Helping Canada

Meet Its Climate

Change Objectives

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Message from the Minister of Natural Resources

The idea that human activities, especially those involving energy consumption, are contributing to the rise of global temperatures is one of today's most pressing sustainable development issues. This phenomenon — climate change — could seriously affect our environment and our economy. Therefore, while continuing to study its causes and effects, we must push ahead with cost-effective solutions.



Climate change presents a challenge, and with challenge comes opportunity. The solutions to this complex problem are opening up opportunities for jobs, growth, increased trade and environmental protection to benefit all Canadians, present and future. Traditionally, many people have seen the economy and the environment as being in conflict — growth in one must come at the expense of the other. If this was ever true, it is certainly not today, when Canadian environmental companies comprise an \$11 billion annual industry in their own right.

One of the key responsibilities of Natural Resources Canada (NRCan) is helping Canadian industries, consumers and home owners become more energy efficient. Our initiatives to this end, which often involve joint efforts by government and industry, have created market opportunities for a range of environmental companies. Our

approach yields many benefits, including new jobs for Canadians; economic growth in communities; better market application of new technologies, many of which originate in NRCan laboratories; lower annual energy bills; and more efficient production processes, which give Canadian industry a competitive edge in global markets.

In short, the drive to boost Canada's energy efficiency is a winning undertaking for government, industry and our environment. At the same time, our efforts have an important international dimension. Under the United Nations *Framework Convention on Climate Change*, Canada is working with other industrialized countries to stabilize greenhouse gas emissions at 1990 levels by the year 2000. NRCan's work in climate research, energy, forestry and other areas is central to the National Action Program on Climate Change, the federal/provincial program that presents Canada's strategy for addressing climate change.

This brochure outlines some of NRCan's climate change programs and initiatives. I am proud of the progress being made by the scientists and staff of NRCan to help Canada live up to its international commitments. The true challenge of the climate change issue, however, is its breadth. All Canadians contribute to the problem, and all Canadians must contribute to the solution. I urge you to join in the solution by using energy more wisely.

Read on, and join the challenge.

A handwritten signature in black ink, reading "A. Anne McLellan". The signature is fluid and cursive, with a long horizontal line extending from the end.

The Honourable A. Anne McLellan

Introduction

Gases such as carbon dioxide and methane exist naturally in the atmosphere, trapping heat and warming the air much the way glass warms the air inside a greenhouse. But human activities, primarily those that use energy, release increased amounts of these and other gases into the atmosphere, threatening to raise global temperatures and change the planet's climate.

Canada is working to stabilize its greenhouse gas (GHG) emissions at 1990 levels by the year 2000. This goal represents a significant challenge, not just for business but for all Canadians. Energy production and use are integral to our economic and social structure and as such, Canadians contribute to the climate change problem when they drive their automobiles, heat their homes, or go about other daily activities that consume energy. To reduce GHG emissions, we must change many of the ways we live and do business.

Natural Resources Canada (NRCan) conducts an extensive climate change program aimed at limiting greenhouse gas emissions across all sectors. It also provides programs and incentives to encourage Canadians to develop and use our natural resources more efficiently and wisely. These initiatives, detailed in the following pages, help us better understand the science and promote a more intelligent use of energy and other resources.

Understanding the Science

The first step in addressing climate change is to understand the science behind it. This covers several areas of research:

- recognizing the difference between natural and human-made change
- identifying the sources and sinks (means of absorbing) of greenhouse gases
- developing computer models that accurately portray climate system dynamics and changes
- understanding the physical and biological impacts of climate change



NRCan researchers are part of an international team working to improve this scientific understanding and are involved in the following studies:

Past and Current Effects on the Environment:

NRCan scientists study rocks, glaciers, sediments and other materials to learn how previous climatic fluctuations affected the environment. They also use satellites to measure such factors as surface radiation, seasonal changes in forests and vegetation, and rates of coastal erosion. This information allows researchers to model various physical and biological processes and provides baseline data for monitoring future change.

Potential Effects of Climate Change: Computer models generate global climate scenarios that would result from increases in greenhouse gases. By applying their knowledge of past and present

climates and environments, scientists can estimate the relative sensitivities or probable impacts of climate change on Canada's landmass, vegetation and coasts. These results can then be incorporated into studies addressing the socio-economic impacts of climate change.

Link Between Energy-Sector Greenhouse Gases and Climate Change: A major study was launched in 1995 to examine the cycling and storage of greenhouse gases and aerosols, improve climate change prediction and detection, support relevant technologies, and identify adaptive strategies for the energy sector.

Promoting Sustainable Development and Energy Efficiency

A number of NRCan's climate change activities help Canada develop more efficient and sustainable energy practices. This effort is essential because the greenhouse gas causing the most concern is carbon dioxide, which enters the atmosphere primarily when fossil fuels are burned to heat our buildings, operate our motor vehicles and run our industries. To stabilize these emissions, we must use our energy as efficiently as possible and rely more on alternative and renewable sources of energy.

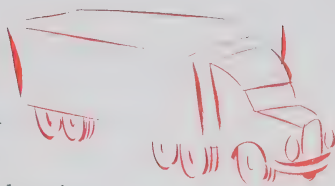
Energy Efficiency: NRCan promotes energy efficiency in many ways. For example, regulations developed by the department help remove less energy-efficient products from the marketplace. NRCan consumer education programs help

encourage wiser energy use. Other NRCan policies, programs and research assist in developing and promoting new technologies and products. These initiatives include the following:

- Setting new performance standards for equipment under the *Energy Efficiency Act*. These energy-efficiency standards apply to major household appliances, hot water heaters, furnaces, air conditioners and electric motors. NRCan is working on model energy codes for new homes and buildings.
- Introducing new regulations governing fluorescent and incandescent reflector lamps, which will reduce annual carbon dioxide emissions by 5.3 million tonnes by the year 2000 — about the equivalent of the annual emissions of one million vehicles.
- Giving Canadians, through the Reno\$ense initiative, the information they need to build energy efficiency into their home renovation plans. In the new housing market, the R-2000 Home Program encourages the construction of energy-efficient houses that are also environmentally friendly and healthy to live in.
- Championing voluntary programs such as the Canadian Industry Program for Energy Conservation and the Energy Innovators Initiative to encourage the private sector to undertake efficiency initiatives.

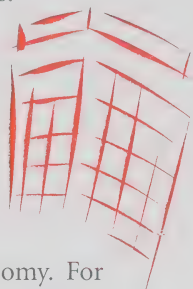


- Boosting vehicle fuel efficiency in Canada by working with manufacturers to improve vehicle technology and by educating motorists about energy-efficient driving practices.



- Collaborating with the Department of Finance to identify impediments to investment in energy-efficient products or processes and to assess ways to address these barriers.

- Supporting, through a broad range of science and technology activities, the development and application of energy-efficient and environmentally responsible processes, products, systems and equipment in all sectors of the economy. For example, the C-2000 Program helps industry develop more energy-efficient building technologies in the commercial sector. The Advanced Integrated Energy Systems program assists communities in applying energy-efficient technologies such as district heating and cooling.



- Managing the Federal Buildings Initiative, FleetWise, and the Federal Industrial Boiler Program, three programs that strive to make federal buildings and vehicle fleets more energy efficient.
- Leading by example: NRCan is taking action to become the most energy-efficient department in the federal government. NRCan's buildings are being retrofitted to improve energy efficiency, and its transportation fleet is being reduced and, where cost-effective and operationally feasible, converted to alternative transportation fuels.

Alternative Transportation Fuels (ATFs):

Transportation is a major source of carbon dioxide and other emissions. These emissions can be reduced through improved energy efficiency and greater use of alternative fuels such as natural gas, propane, methanol, ethanol and bio-diesel fuels. NRCan's work with the private sector to develop new ATF technologies has helped make Canada a leader in this field. Future technology improvements will include new electronic controls, lighter-weight materials, performance improvements, and vehicles powered by electricity and hydrogen fuel cells that produce ultra-low emissions or no emissions at all.

Renewable Energy:

Renewable energy, including hydro, biomass, wind, solar, waste and earth energy, has the potential to play a more important role in meeting



Canada's energy requirements and reducing greenhouse gas emissions. NRCan works with partners to improve the cost and performance of emerging renewable energy technologies. NRCan is also committed to promoting renewable energy use and helping industry gain access to niche markets. For example, NRCan is discussing pilot projects with electric utilities to supply federal facilities with "green" power. As in energy efficiency, NRCan is working with the Department of Finance to accord more appropriate tax treatment to the renewable energy sector.

Carbon Dioxide Capture: NRCan also uses its state-of-the-art facilities to examine ways to capture carbon dioxide resulting from the burning of fossil fuels and to dispose of it in the most economical way, either through sale or long-term storage.

Promoting Sustainable Management of Forests

Growing forests absorb carbon dioxide from the atmosphere and thus act as an important carbon sink. When trees die, suffer serious damage or are used for fuel, they release the gas back into the atmosphere. NRCan's Canadian



Forest Service (CFS) works with the provinces and industry to ensure that our forests become net sinks of carbon rather than net sources by promoting sustainable forest management. Through its Model Forest Program, for example, the CFS helps individuals and organizations in Canada and around the world form partnerships to develop their own working versions of sustainable forestry. In addition to encouraging communities and companies to plant trees under the auspices of the National Community Tree Foundation, the CFS promotes the development and use of biomass as an alternative fuel in the forestry sector. The department also assesses the potential impact of climate change on forests.

The Voluntary Challenge and Registry

In addition to its regulatory, information and technology initiatives, and its input into federal tax measures, NRCan is also fostering voluntary action by key GHG emitters.

Launched in early 1995, the Voluntary Challenge and Registry (VCR) encourages the private and public sectors to take voluntary steps to limit greenhouse gas emissions. With the VCR, Canadian companies officially register their plans for reducing their greenhouse gas emissions, making them publicly accountable for their actions on climate change. Their plans are open to public scrutiny, and each company can be judged on the strength of its commitments and its success in meeting its objectives.

The VCR has enjoyed considerable success. With over 600 organizations registered as of fall 1996, climate change is now clearly on the corporate agenda. The participating companies represent a majority of GHG emissions in Canada, including some 80 per cent of emissions in the upstream oil and gas sector, 60 per cent of emissions in the mining sector and 80 per cent of emissions in the forestry sector. The VCR is also successful in less tangible areas such as raising awareness, deepening understanding and changing mindsets — each a key component of commitment. Another important offshoot of the VCR is that leaders in each sector are encouraging companies other than their own to take up the voluntary challenge.



VCR • MVR

Other Initiatives

In addition to its direct efforts in science, energy and forestry, NRCan also leads a number of other initiatives on climate change:

- The department pursues memoranda of understanding and letters of cooperation with key national associations to encourage their members to take voluntary action on energy efficiency and greenhouse gas abatement. Agreements have been signed with associations representing the oil, gas and coal sectors; pipelines and electrical utilities; the mining, retail and manufacturing sectors; and home-builders, municipalities and school boards.
- NRCan promotes GHG abatement projects between Canadian and foreign businesses and organizations through the Canadian Joint Implementation Initiative. Joint initiatives may include energy development projects that use highly energy-efficient technologies, industrial projects that are highly energy efficient, fuel switching or power generation projects, waste management or forestry projects, and efficient technologies that reduce commercial or residential energy use. With the developing world expanding rapidly, these joint initiatives will undoubtedly become more important.
- The Minister of Natural Resources maintains close communications with both business leaders and environmental groups.
- The department is continuing its work in economic analysis, emissions forecasting and new policy and program development.

All of these initiatives are designed to increase our understanding of the nature and effects of climate change, and to help us develop and implement logical solutions.

NRCan, Climate Change and You

Now you know what NRCan is doing to help Canada meet its climate change objectives. The climate change challenge extends to all Canadians and Canadian companies.

In the face of this challenge, we can change the way we behave as consumers by using alternative forms of transportation such as public transit or vehicles powered by alternative fuels like natural gas or propane. We can choose our goods and services more carefully by considering the energy consumption of new appliances or the amount of waste we generate from the products we buy. NRCan's work can help us all become more energy-efficient consumers, business leaders and responsible environmental citizens.



There are many steps we all can take, especially toward using energy more wisely. Our actions can contribute to Canada's economy, improve our environment and help meet our country's climate change objectives.

For more information on how you can use energy more efficiently, call NRCan toll free at **1-800-387-2000**, or visit our Internet site at **<http://eeb-dee.nrcan.gc.ca>**

For More Information on Climate Change

The following publications are available from the Environment Division, Energy Policy Branch, Natural Resources Canada, 580 Booth Street, 19th Floor, Ottawa, Ontario K1A 0E4

Telephone: (613) 996-8534

Fax: (613) 947-6799

E-mail: env@es.nrcan.gc.ca

- * *Canada's National Action Program on Climate Change*
- * *Creating a Climate for Change - NRCan's Climate Change Program*
- * *Emission Reductions from Federal Operations*
- * *Federal Action Program on Climate Change*
- * *Voluntary Challenge & Registry - Progress Report*

Other Related Publications

- * *Canada's Energy Outlook*
- * *Energy Efficiency Trends in Canada*
- * *Influencing Energy Use in Canada: Progress Indicators on Initiatives Delivered by Natural Resources Canada*
- * *Renewable Energy Strategy - Creating a New Momentum*
- * *Report to Parliament on the Administration and Enforcement of the Energy Efficiency Act*
- * *The Science of Change: Environmental Geoscience at the Geological Survey of Canada*
- * *The State of Canada's Forests: Sustaining Forests at Home and Abroad*

